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3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427			BODDIE, WILLIAM	
			ART UNIT	PAPER NUMBER
			2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/693,402	<b>Applicant(s)</b> MULLIGAN, ROGER C.	
	<b>Examiner</b> William Boddie	<b>Art Unit</b> 2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/12/04, 4/3/06</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of claims 4 and 5 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

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2. The disclosure is objected to because of the following informalities: page 3, line 6 contains a misspelled word, appears the Applicant intended "senor" to be sensor.

Appropriate correction is required.

***Claim Objections***

3. Claim 4 is objected to because of the following informalities: "the touch pad" has no antecedent basis. It appears that the Applicant intended this to read, the touch-generating pad. Claim 4 will currently be examined under this assumption. Appropriate correction is required.

4. Claim 5 is objected to because of the following informalities: "behind the touch senor." It appears that the Applicant intended this to read, behind the touch sensor. Claim 5 will currently be examined under this assumption. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Currently the Applicant's Specification states that the touch-generating pad is located behind the touch sensor (page 3, lines 4-6) not the tactile button as currently claimed.

***Claim Rejections - 35 USC § 102***

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7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-2, 4, 8, 12-13, 36-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Liao et al. (US 6,392,637).

**With respect to claim 1**, Liao discloses, a touch-sensing system (fig. 1) comprising:

a touch sensor (42 in fig. 2) configured to produce an electrical signal in response to a touch input (col. 3, lines 57-65);

a touch-generating pad (162 in fig. 10) proximate to at least a portion of the touch sensor (col. 5, lines 26-30); and

a tactile button (946a/b in fig. 11) associated with the touch-generating pad (46d in fig. 11), the tactile button configured to provide tactile feedback (col. 5, lines 16-20) and to couple to the touch-generating pad upon activation by a user (D in fig. 11), the touch sensor configured to detect the coupling of the tactile button with the touch-generating pad (col. 5, lines 31-36).

**With respect to claim 2**, Liao discloses, the touch-sensing system of claim 1 (see above), wherein the tactile button is configured to provide a responsive force in response to being pressed by the user (snap back), the responsive force being operative to provide tactile feedback to the user (col. 5, lines 16-20).

**With respect to claim 4**, Liao discloses, the touch-sensing system of claim 1 (see above), wherein the tactile button is located remotely from the touch pad (note the remote distance (D) of the button 946 from the touch-generating pad in fig. 11).

**With respect to claim 8**, Liao discloses, the touch-sensing system of claim 1 (see above), wherein when the tactile button couples the touch-generating pad, the touch-generating pad is configured to mechanically contact the touch sensor sufficient to cause a detectable touch on the touch sensor (col. 5, lines 31-36).

**With respect to claim 12**, Liao discloses, the touch-sensing of claim 1 (see above) wherein the touch-generating pad is removably attached to the touch sensor (col. 5, lines 12-15; col. 5, lines 60-64).

**With respect to claim 13**, Liao discloses, the touch-sensing system of claim 1 (see above), wherein the touch-generating pad is permanently attached to the touch sensor (adhesive; 160 in fig. 10).

**With respect to claim 36**, Liao discloses, a method for providing tactile feedback to a user of a touch-sensing system (col. 5, lines 16-20), the touch-sensing system includes a touch sensor (42 in fig. 2), the method comprising:

attaching a touch-generating pad (162 in fig. 10) onto the touch sensor in such a way that when not activated, the touch-generating pad does not cause a touch on the touch sensor (this seems limitation is inherent in that if the generating pad did cause a touch then the buttons on the device would be completely useless); and

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in response to the user pressing a tactile button (946a/b in fig. 10/11) associated with the touch-generating pad, activating the touch-generating pad and providing tactile feedback to the user (col. 5, lines 16-20); and

in response to activating the touch-generating pad, causing a touch on the touch sensor (col. 5, lines 31-36).

**With respect to claim 37**, Liao discloses, the method of claim 36 (see above), wherein in response to the user pressing the tactile button, providing a responsive force as tactile feedback to the user (col. 5, lines 16-20).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3, 5-7, 9-10 and 38-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liao et al. (US 6,392,637) in view of Selig et al. (US 6,492,978).

**With respect to claim 3**, Liao discloses, the touch-sensing system of claim 1 (see above).

Liao does not expressly disclose, wherein coupling the tactile button with the touch-generating pad electrically couples the touch-generating pad to the touch sensor.

Selig discloses, electrically coupling (note the ground in 26 in fig. 7) a tactile button (24D in fig. 7) with a touch sensor (16b in fig. 7; col. 7, lines 45-64)

Selig and Liao are analogous art because they are both from the same field of endeavor namely touch screen button overlays.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the buttons of Liao with the grounding means and electrically conductive buttons of Selig.

The motivation for doing so would have been to enable the use of a capacitive touch screen and use of such with stylus' or gloved hand (Selig; col. 7, lines 45-47).

Therefore it would have been obvious to combine Selig with Liao for the benefit of applicability to different types of touch screens to obtain the invention as specified in claim 3.

**With respect to claim 5**, Liao discloses, the touch-sensing system of claim 1 (see above).

Liao does not expressly disclose, wherein the tactile button is located behind the touch sensor.

Selig discloses, wherein a tactile button (24 in fig. 4) is located behind the touch sensor (in fig. 4, 30, 28, 26, 18 and 16 are all seen as parts of the touch sensor; therefore as disclosed the button is located behind the touch sensor part 30 in fig. 4.)

At the time of the invention it would have been obvious to one of ordinary skill in the art to place the button of Liao behind the touch sensor as taught by Selig, for the benefit of securely holding the button in place (Selig; col. 6, lines 20-30).

**With respect to claim 6**, Liao discloses, the touch-sensing system of claim 1 (see above).



Liao does not expressly disclose, wherein the tactile button has an electrical potential different than that of the touch-generating pad, and wherein the tactile button activates the touch-generating pad by electrically connecting to and changing the electrical potential of the touch-generating pad.

Selig discloses, wherein a tactile button (24D in fig. 7) has an electrical potential (note ground in 26 of fig. 7) different from the touch sensor (16b in fig. 7), and wherein the tactile button electrically connects to and changes the electrical potential of the touch sensor (col. 7, lines 56-64).

At the time of the invention it would have been obvious to one of ordinary skill in the art to use a capacitive touch sensor with the grounded buttons of Selig in place of the buttons and touch pad of Liao.

The motivation for doing so would have been the ability to create transparent capacitive touch sensors, thus allowing displays to be located below the sensor.

**With respect to claim 7**, Liao and Selig disclose, the touch-sensing system of claim 6 (see above).

Selig further discloses, wherein the electrical potential of the tactile button is circuit ground (col. 7, lines 45-55).

**With respect to claim 9**, Liao discloses, the touch-sensing system of claim 1 (see above), a tactile button coupling a touch-generating pad to affect a touch on a touch sensor (col. 5, lines 12-36).

Liao does not expressly disclose the use of an optical touch sensor system.

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Selig discloses, a tactile button (24 in fig. 8) configured to break a light beam emitted by the touch sensor (36a in fig. 8) sufficient to cause a detectable touch on the touch sensor (col. 7, lines 65-67; col. 8, lines 1-24).

At the time of the invention it would have been obvious to replace the touch pad of Liao with the IR touch screen of Selig.

Therefore it would have been obvious to combine Selig and Liao for the benefit of a more precise touch screen.

**With respect to claim 10**, Liao discloses, the touch-sensing system of claim 1 (see above), a tactile button coupling a touch-generating pad to affect a touch on a touch sensor (col. 5, lines 12-36).

Liao does not expressly disclose an acoustic touch sensor.

Selig discloses, a tactile button (24 in fig. 8) configured to absorb the energy of an acoustic wave sufficient to cause a detectable touch on the touch sensor (col. 8, lines 24-29).

At the time of the invention it would have been obvious to replace the touch pad of Liao with the IR touch screen of Selig.

Therefore it would have been obvious to combine Selig and Liao for the benefit of a more precise touch screen.

**With respect to claims 38-41**, Liao discloses, the method of claim 36 (see above).

Liao does not expressly disclose, different types of touch sensors.

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Selig discloses, a capacitive touch screen (col. 7, lines 45-55), a mechanical contact touch screen (fig. 4), an optical touch screen (col. 7, lines 65-67; col. 8, lines 1-8), and an acoustic wave touch screen (col. 8, lines 25-29).

At the time of the invention it would have been obvious to replace the touch sensor of Liao with one of the types of touch sensors of Selig for the benefit of allowing a display screen to be shown from below the touch sensor system (Selig, 18 in fig. 4).

11. Claims 11 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liao et al. (US 6,392,637) in view of Applicant's admitted prior art (hereinafter APA).

**With respect to claims 11 and 42**, Liao discloses, the system of claim 1 (see above) and the method of claim 36 (see above).

Liao does not expressly disclose, a vibration touch sensor.

The Applicant's presents that the use of a vibration touch sensor is well known in the art in page 7, lines 7-9 in the Specification.

At the time of the invention it would have been obvious to replace the touch pad of Liao with a vibration touch sensor as disclosed by the Applicant for the benefit of allowing a display to be placed below the touch sensor.

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liao et al. (US 6,392,637) in view of Stohrer et al. (US 6,864,878).

**With respect to claim 14**, Liao discloses, the touch-sensing system of claim 1 (see above).

Liao further discloses, providing buttons of different heights so that they are discernable by touch (col. 5, lines 20-26).

Liao does not expressly disclose texturing on the buttons.

Stohrer discloses, including texturing (abstract) that enables the user to determine by a sense of touch the function of an input associated with touch zones (16 in fig. 4).

Stohrer and Liao are analogous art because they are both from the same field of endeavor namely touch screen overlays.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the texturing of Stohrer on the buttons of Liao for the benefit of visually impaired users (Stohrer; col. 1, lines 28-34).

13. Claims 15-18, 21-23, 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Selig et al. (US 6,492,978) in view of Liao et al. (US 6,392,637).

**With respect to claim 15,** Selig discloses, a system for interacting with a user (fig. 1) comprising:

a display screen (18 in fig. 3);

a touch sensor positioned in front of the display screen (16 in fig. 3), the touch sensor being configured to produce a signal in response to a touch input (col. 2 lines 28-30);

a touch-generating pad positioned in front of the touch sensor, the touch generating pad being configured such that the touch-generating pad, when not

activated, does not cause a detectable touch on the touch sensor and, when activated, causes a detectable touch on the touch sensor; and

a tactile button (24D in fig. 7) associated with the touch-generating pad, the tactile button, when pressed by a user, being configured to activate the touch-generating pad.

Selig does not expressly disclose, a touch-generating pad.

Liao discloses, a touch-generating pad (162 in fig. 10) positioned in front of a touch sensor (col. 5, lines 12-36), that when activated by the depressing of a tactile button (946a/b in fig. 10/11) causes a detectable touch on the touch sensor (D in fig. 11).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the touch-generating pad of Liao in-between the tactile button and touch sensor of Selig.

The motivation for doing so would have been to further protect the touch sensor surface.

Therefore it would have been obvious to combine Liao with Selig for the benefit of protecting the touch screen to obtain the invention as specified in claim 15.

**With respect to claim 16**, Selig and Liao disclose, the system of claim 15 (see above).

Selig further discloses, wherein the tactile button is configured to provide a responsive force in response to being pressed by the user, the responsive force is sufficient to provide tactile feedback to the user (col. 4, lines 51-65).

**With respect to claim 17**, Selig and Liao disclose, the system of claim 15 (see above).

Selig does not expressly disclose a snap dome button.

Liao further discloses, wherein the tactile button is a snap dome button (946a/b in fig. 11).

It would have been obvious to replace the button of Selig with the button of Liao for the benefit of a higher force button.

**With respect to claim 18**, Selig and Liao disclose, the system of claim 15 (see above).

Selig further discloses, wherein the tactile button is a silicone elastomeric button (col. 4, lines 43-50).

**With respect to claim 21**, Selig and Liao disclose, the system of claim 15 (see above).

Selig further discloses, wherein the touch sensor is a capacitive touch sensor (col. 7, lines 45-47).

**With respect to claim 22**, Selig and Liao disclose, the system of claim 21 (see above).

Selig and Liao further disclose, wherein when not activated, the touch-generating pad is configured not to capacitively couple with the touch sensor (this is inherent in that if the generating pad coupled with the sensor without being “activated” then the buttons would become useless. Note the “not activated” positions of buttons in both Liao and Selig, which is directly analogous to the Applicant's figures 4 and 5).

**With respect to claim 23**, Liao and Selig disclose, the system of claim 21 (see above).

Selig and Liao further disclose, wherein in response to being activated, the touch-generating pad is configured to capacitively couple with the touch sensor (note the rejection in claim 22. The “activating” of Selig’s button couples the button with the sensor; with the inclusion of Liao’s generating pad the button couples the pad, which in turn would couple with the sensor system. Further note the “activated” button presses of Liao and Selig, which are directly analogous to the Applicant’s figures 4 and 5).

**With respect to claim 27**, Selig and Liao discloses, the system of claim 15 (see above).

Selig further discloses, wherein the touch sensor is an optical touch sensor (col. 7, lines 65-67; col. 8, lines 1-24).

**With respect to claims 28-29**, see the above analogous claims 22-23 for merits of the rejection.

**With respect to claim 30**, Selig and Liao disclose, the system of claim 15 (see above).

Selig further discloses, wherein the touch sensor is a surface acoustic wave touch sensor (col. 8, lines 24-29).

**With respect to claims 31-32**, see the above analogous claims 22-23 for merits of the rejection.

14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Selig et al. (US 6,492,978) in view of Liao et al. (US 6,392,637) and further in view of Strasser et al. (US 2003/0128191).

**With respect to claim 19**, Selig and Liao disclose, the system of claim 15 (see above).

Selig further discloses, the use of any type of key as long as they provide tactile feedback and actuate the touch screen (col. 9, lines 1-3).

Neither Selig not Liao disclose, wherein the tactile button is a rocker switch.

Strasser discloses, wherein a tactile button is a rocker switch (para. 2).

Strasser, Selig and Liao are all analogous art because they are all from the same field of endeavor namely touch screen overlays and tactile buttons for use thereon.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace a tactile button of the touch screen of Selig and Liao with a rocker switch as disclosed by Strasser.

The motivation for doing so would have been to offer a switch that provides discernable "off" and "on" positions in the device for added functionality (Strasser; para. 20).

Therefore it would have been obvious to combine Strasser with Selig and Liao for the benefit of added functionality to obtain the invention as specified in claim 19.

15. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Selig et al. (US 6,492,978) in view of Liao et al. (US 6,392,637) and further in view of Hodsdon et al. (US 5,146,615).



**With respect to claim 20**, Selig and Liao disclose, the system of claim 15 (see above).

Selig further discloses, a button that includes an electrical conductor integrally formed in the key to provide an electrical grounding path (col. 7, lines 26-34).

Neither Selig nor Liao expressly disclose, wherein the tactile button is a carbon button.

Hodsdon discloses, wherein a tactile button is a carbon button (col. 5, lines 34-38).

Hodsdon, Selig and Liao are all analogous art because they are all from the same field of endeavor namely tactile button overlays.

At the time of the invention it would have been obvious to one of ordinary skill in the art to replace the button of Selig and Liao with a carbon button as taught by Hodsdon.

The motivation for doing so would have been the advantage of design flexibility allowing different overlays to be made quickly and cheaply (Hodsdon; col. 2, lines 61-64).

Therefore it would have been obvious to combine Hodsdon with Selig and Liao for the benefit of design flexibility to obtain the invention as specified in claim 20.

16. Claims 24-26 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Selig et al. (US 6,492,978) in view of Applicant's admitted prior art (hereinafter APA).

**With respect to claims 24 and 33**, Selig discloses, the system of claim 15 (see above).

Selig does not expressly disclose, a vibration or resistive touch sensor.

The Applicant's presents that the use of both a resistive and vibration touch sensor is well known in the art (specification; page 7, lines 7-9).

At the time of the invention it would have been obvious to replace the touch screen of Selig with a resistive or vibration touch sensor as disclosed by the Applicant for the benefit of a more precise touch screen system.

**With respect to claims 25-26 and 34-35**, see the above analogous claims 22-23 for merits of the rejection.

### ***Conclusion***

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kraus et al. (US 6,776,546) discloses a keyboard overlay for a touch screen. Severson (US 6,661,407) discloses, interchangeable overlays that conduct charge through the overlay.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wlb  
4/24/06

AMR A. AWAD  
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read "Amr A. Awad", with a stylized flourish at the end.